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DSP Servo System for Satellite Scanning

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Electrical Engineering Technology

Senior Design Phase II

Final Report

Project: DSP Servo System

For

Satellite Scanning

Submitted To: Professor Ron Emery

&

Professor Paul Lin

Submitted By: Daniel J. Alderdice

Date Submitted: April 26, 1989

ABSTRACT

OF

THE SERVO IR&D TASK

This task was a combined research effort between ITT Aerospace/Optical Division and IPFW.

Satellite scanning and satellite imaging are two very broad subjects. A generalized discussion of both subjects is included to provide some insight to the servo IR&D task.

The radiometers ITT Aerospace/Optical Division is developing for the GOES program uses analog and digital techniques to control the scan system. Many large circuit boards are used to implement this method of servo control.

The servo IR&D task explored the feasibility of using a single high-speed microprocessor (i.e. TMS320C25) to control a satellite scan system. The system consisted of the TMS320C25 SWDS (Software Development System), a DC brushless motor, 20-bit optical encoder, power amplifier, power supplies and an Analog Interface Board (AIB). The encoder readout board (developed by Steve Buffmeyer and I) monitored the data bus at the output of the optical encoder and provided a means of zeroizing the optical encoder.

Currently, ITT's plans for next-generation radiometers baseline the technology explored in this research.

Table of Contents

Title	Page
TABLE OF FIGURES	ii
PREFACE	iii
1.0 BACKGROUND INFORMATION	1
1.1 GOES: Program Overview	1
1.2 Satellite Scanning and Imaging	1
1.3 Image Interpretation	5
1.4 GOES Contract Procurement	8
1.5 The DSP Approach	13
2.0 PROJECT OVERVIEW	17
2.1 Cooperative Research Effort	17
2.2 Problem	17
2.3 Solution	17
2.4 Summary	18
3.0 CRITERIA	19
4.0 TECHNICAL DESCRIPTION	20
4.1 Physical Description	20
4.2 Functional Description	22
4.3 Testing	25
5.0 CONCLUSION	26
BIBLIOGRAPHY	28
APPENDIX A : Optical Encoder Illustration and Device/Specifications	
APPENDIX B: SN74LS185 Data Sheets	
APPENDIX C: SN74LS48 Data Sheets	
APPENDIX D: Encoder Readout Fixture Schematic	

Table of Figures

Figure Number	Page
1 Remote Sensing Model	2
2 Typical Satellite Raster Scan	2
3 Complete Electromagnetic Spectrum	3
4 Graph: Cloud Thickness	6
vs.	
Cloud Brightness	
5 Graph: Temperature vs. Brightness	6
6 Global Meteorological Observation System	8
7 Article On GOES West Failure	9
8-11 Pictures of Electrical Resolver	11
12 Induction Resolver Schematic	12
13 DSP Servo System Development Phases	15
14 Block Diagram of DSP Servo System	15
15 Initial Scan Pattern	16
16 Modified Scan Pattern	16
17 Picture of Encoder Readout Fixture	20
18 Encoder Readout Fixture Dimensions	21
19 Timing Diagrams for HOLD and HOLD A	24
20 DSP Servo System With Encoder Readout	27
Fixture Incorporated In The Feedback Loop	